

The diagram shows a sensor element 10 with a positive (+) and negative (-) terminal. The positive terminal is connected to a reference voltage circuit 30. This circuit includes a first operational amplifier 21 with its non-inverting input (+) connected to a reference voltage source Ref1 (23) and its inverting input (-) connected to a resistor R1 (22). The output of op-amp 21 is connected to the positive terminal of the sensor element 10. A second operational amplifier 31 is also connected to the reference voltage circuit 30. Its non-inverting input (+) is connected to a resistor R2 (32), and its inverting input (-) is connected to a resistor R3 (33). The output of op-amp 31 is connected to the negative terminal of the sensor element 10. A third operational amplifier 34 is connected to the negative terminal of the sensor element 10. Its non-inverting input (+) is connected to a resistor R4 (35) and a capacitor 38a. The inverting input (-) of op-amp 34 is connected to a resistor R5 (36) and a capacitor 38b. The output of op-amp 34 is connected to the negative terminal of the sensor element 10. A dashed line 37 separates the reference voltage circuit 30 from the sensor element 10. A label 'A/F OUTPUT' is shown at the bottom left, and a label 'Ip' with 'LEAN' and 'RICH' arrows is shown at the top left.

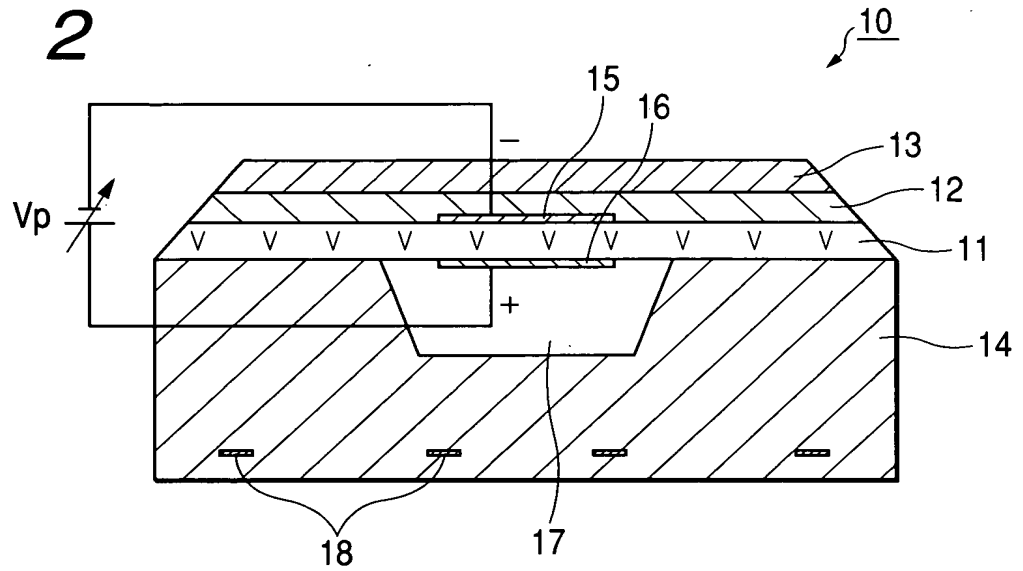
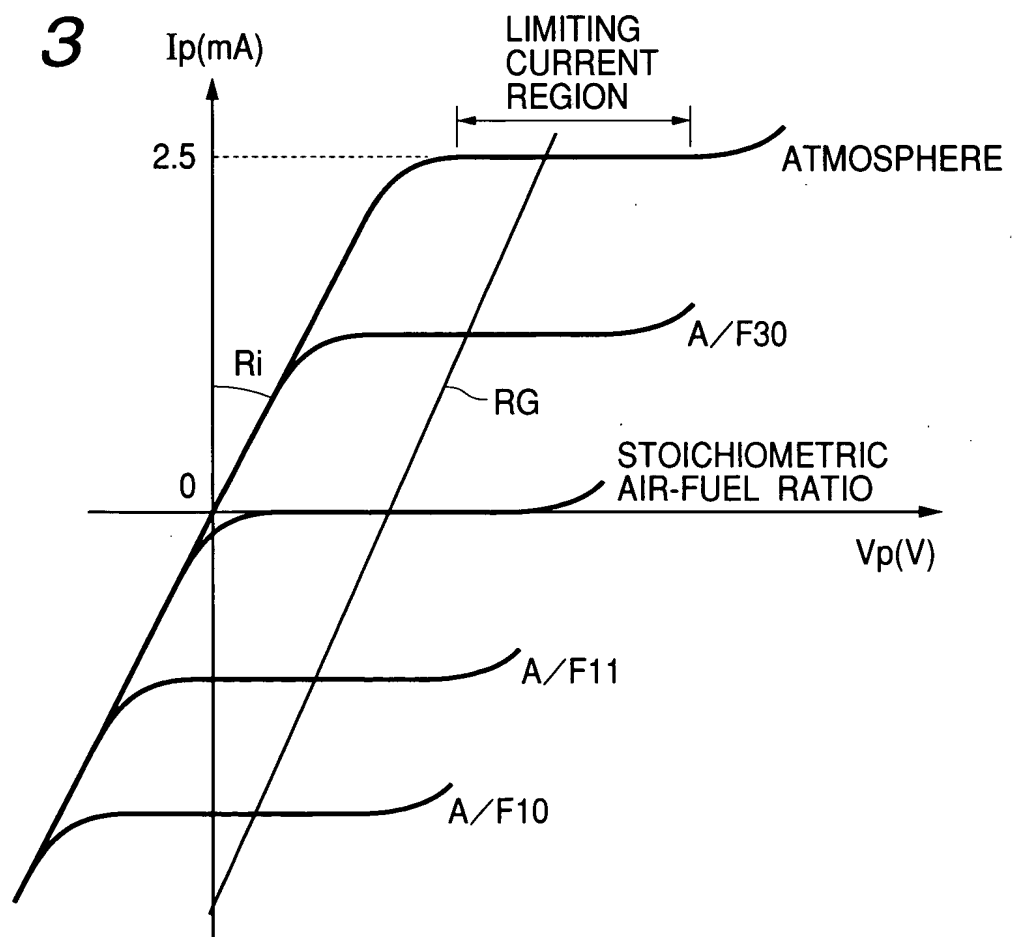
FIG. 2**FIG. 3**

FIG. 4A

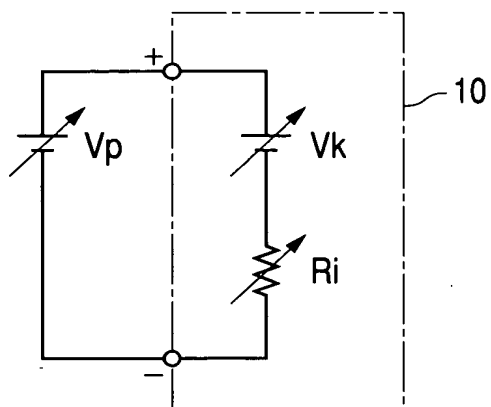


FIG. 4B

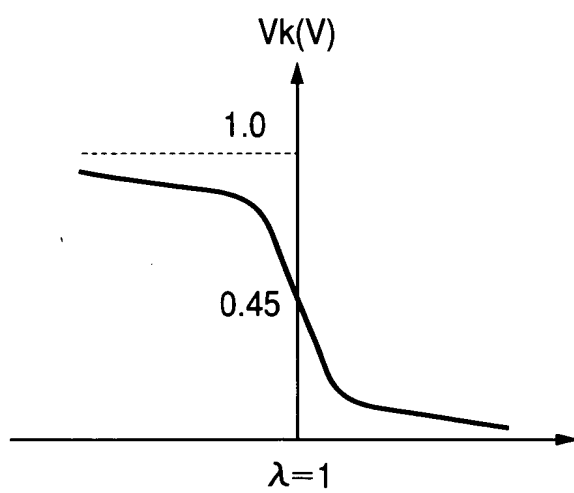


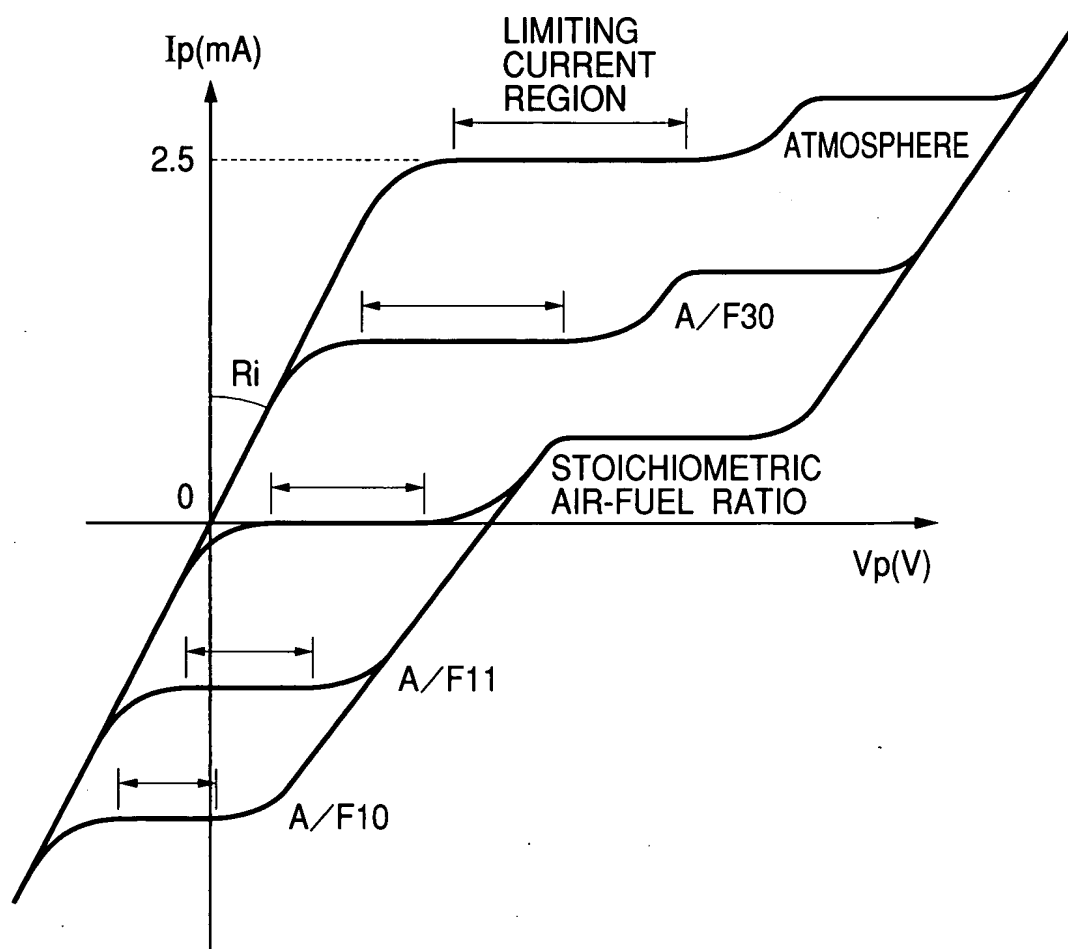
FIG. 5

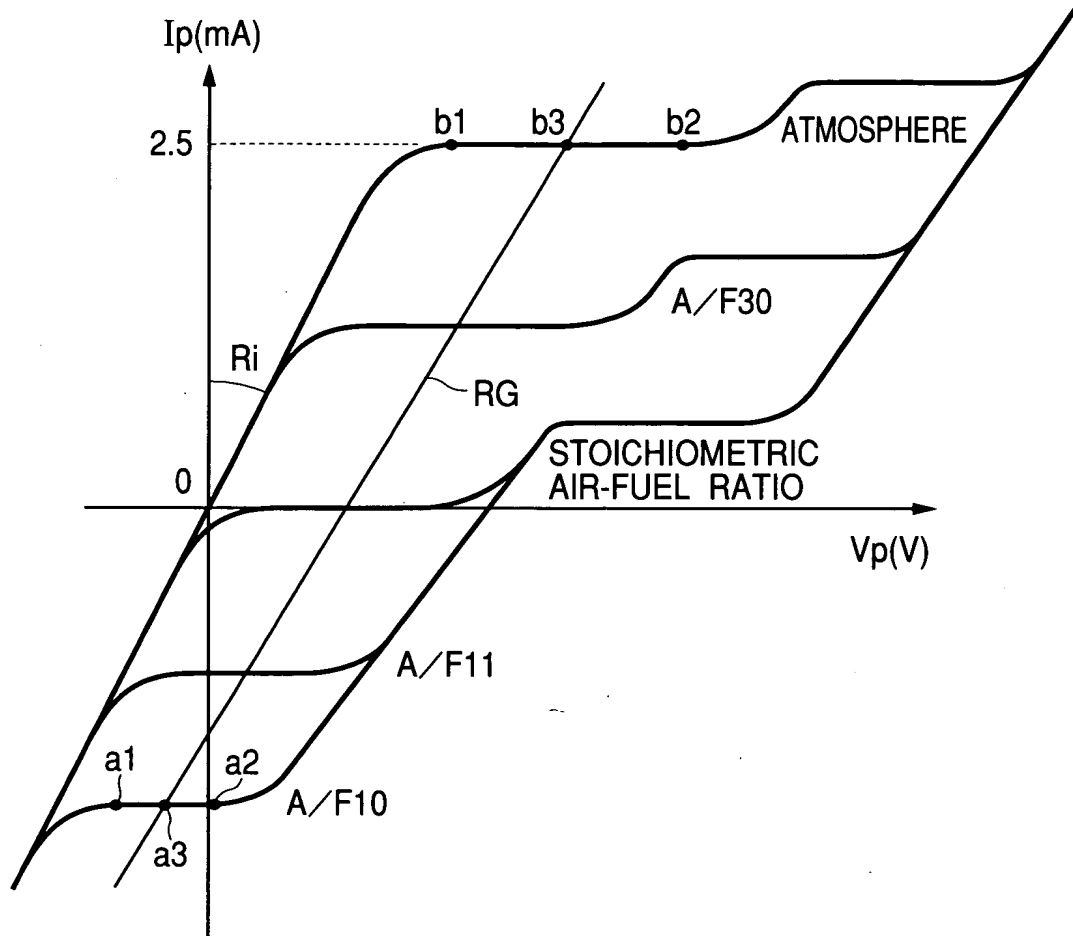
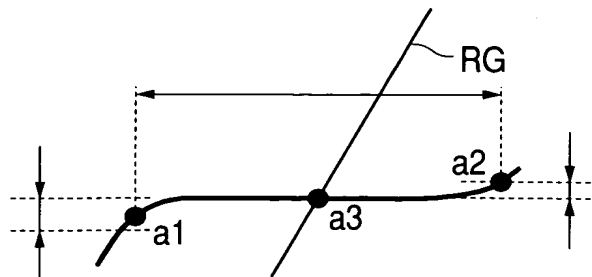
FIG. 6**FIG. 7**

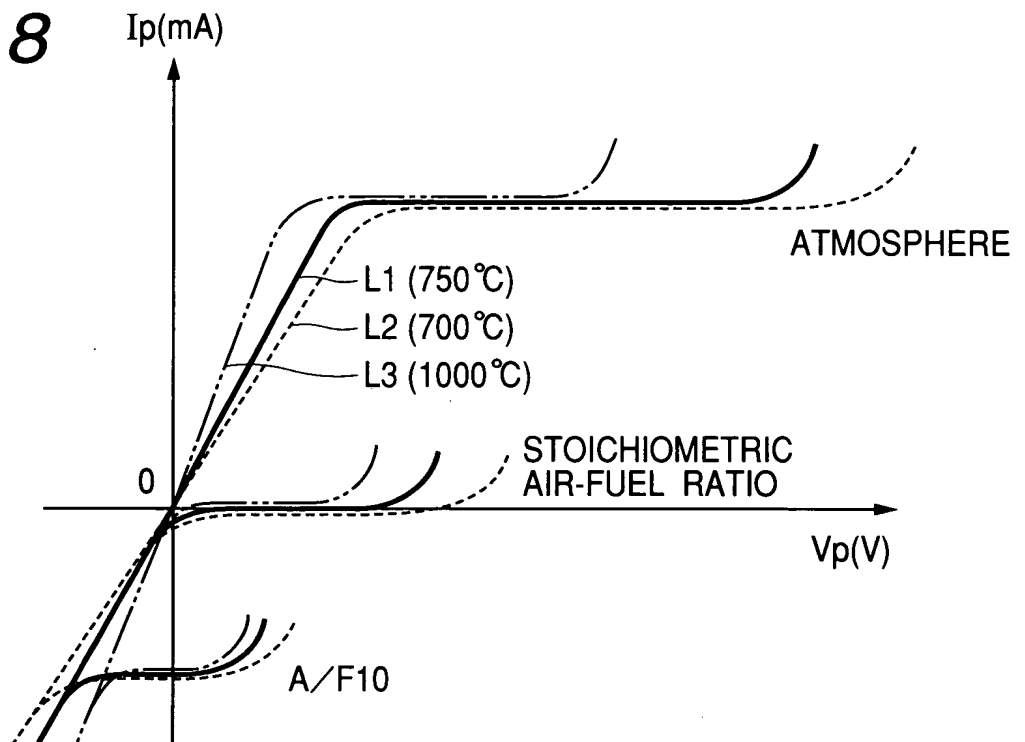
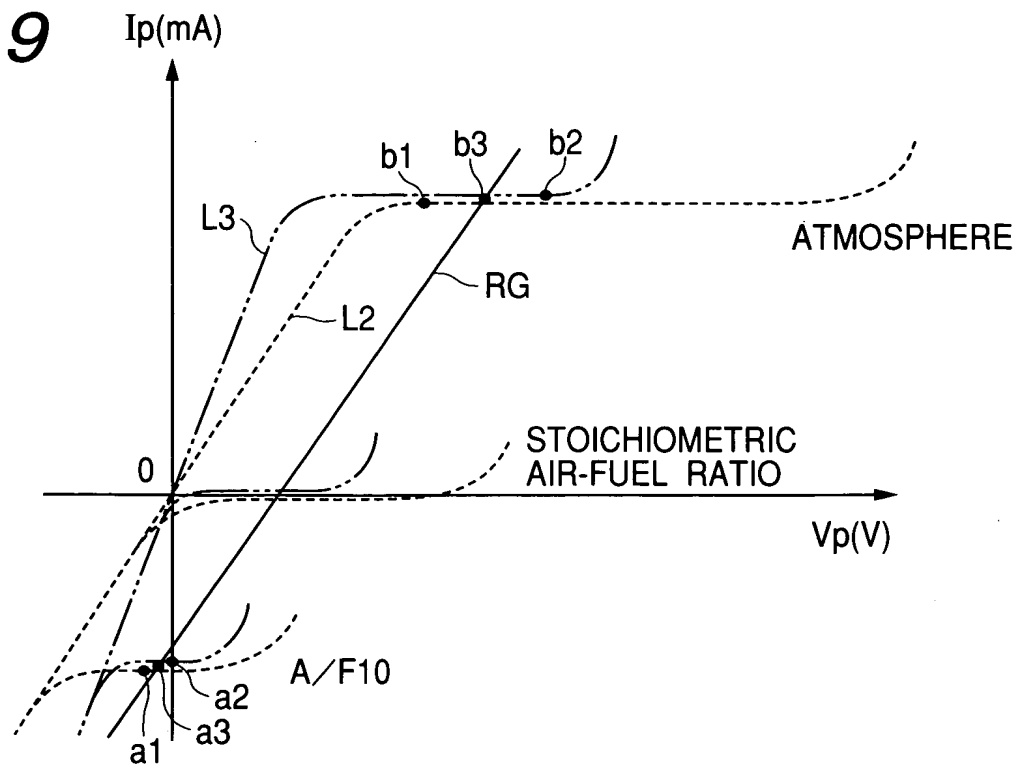
FIG. 8**FIG. 9**

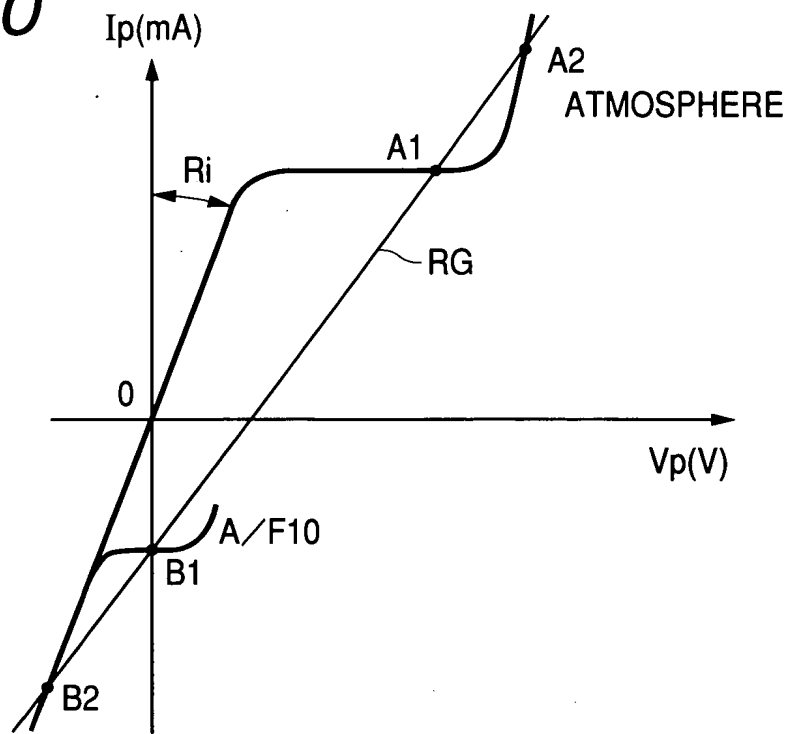
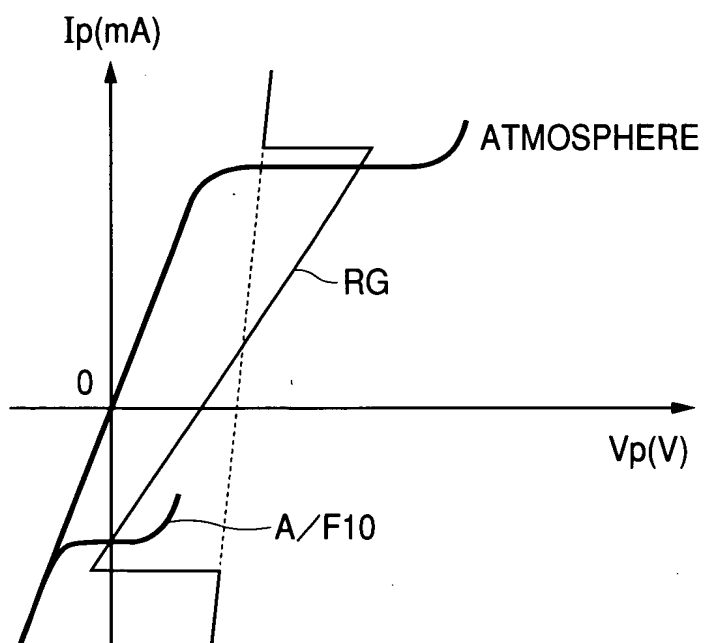
FIG. 10**FIG. 11**

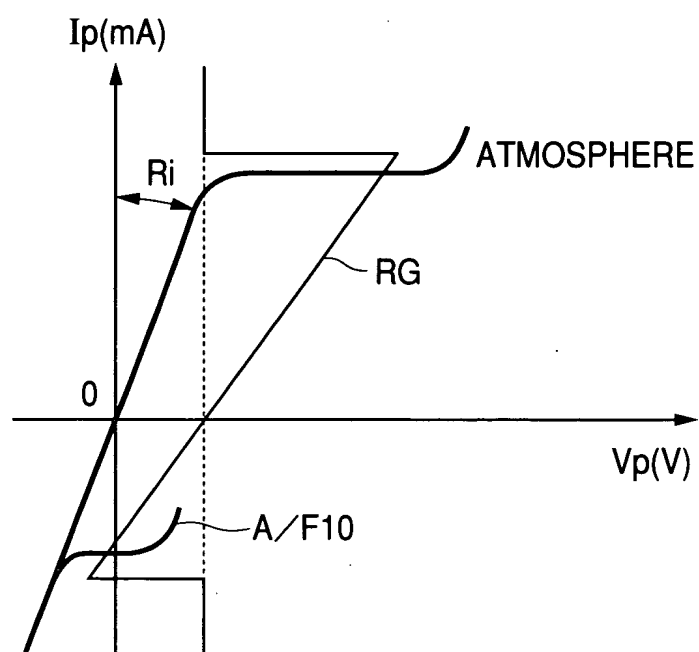
FIG. 13

FIG. 14

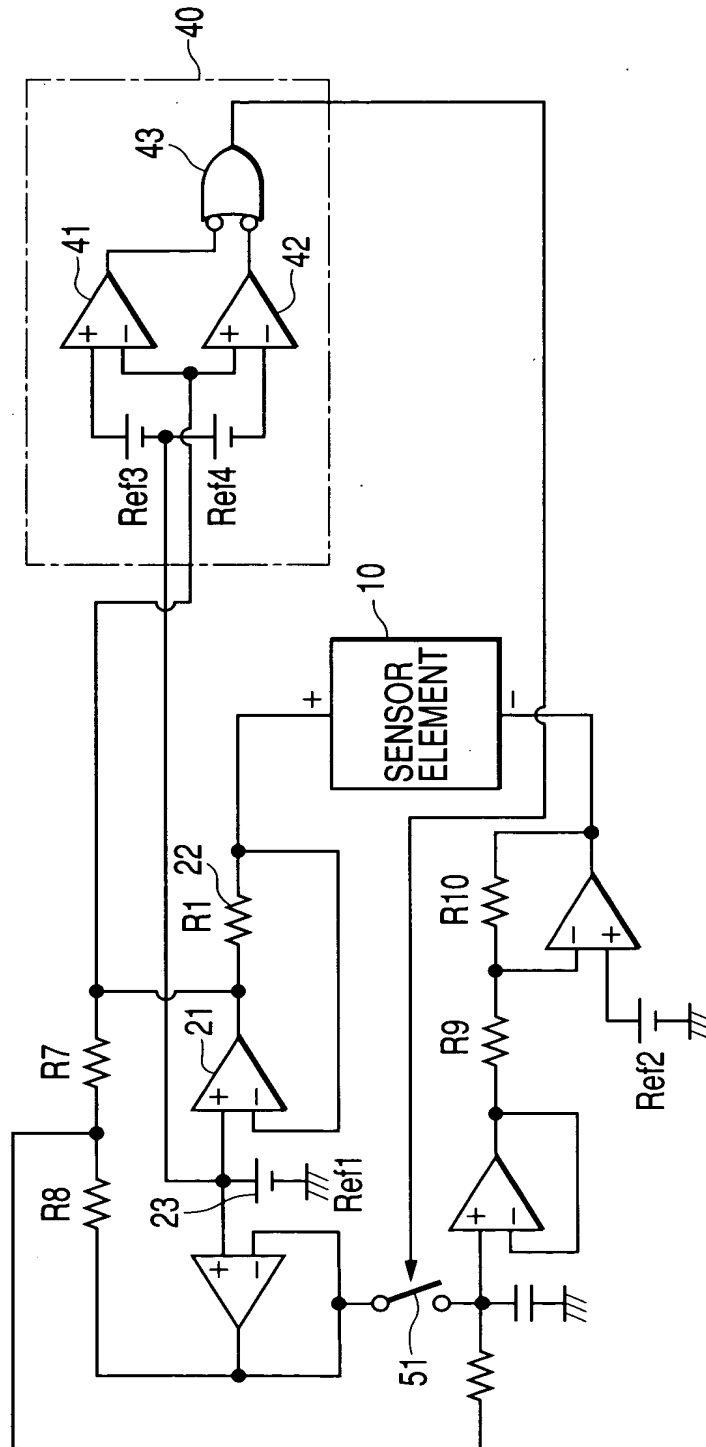


FIG. 15

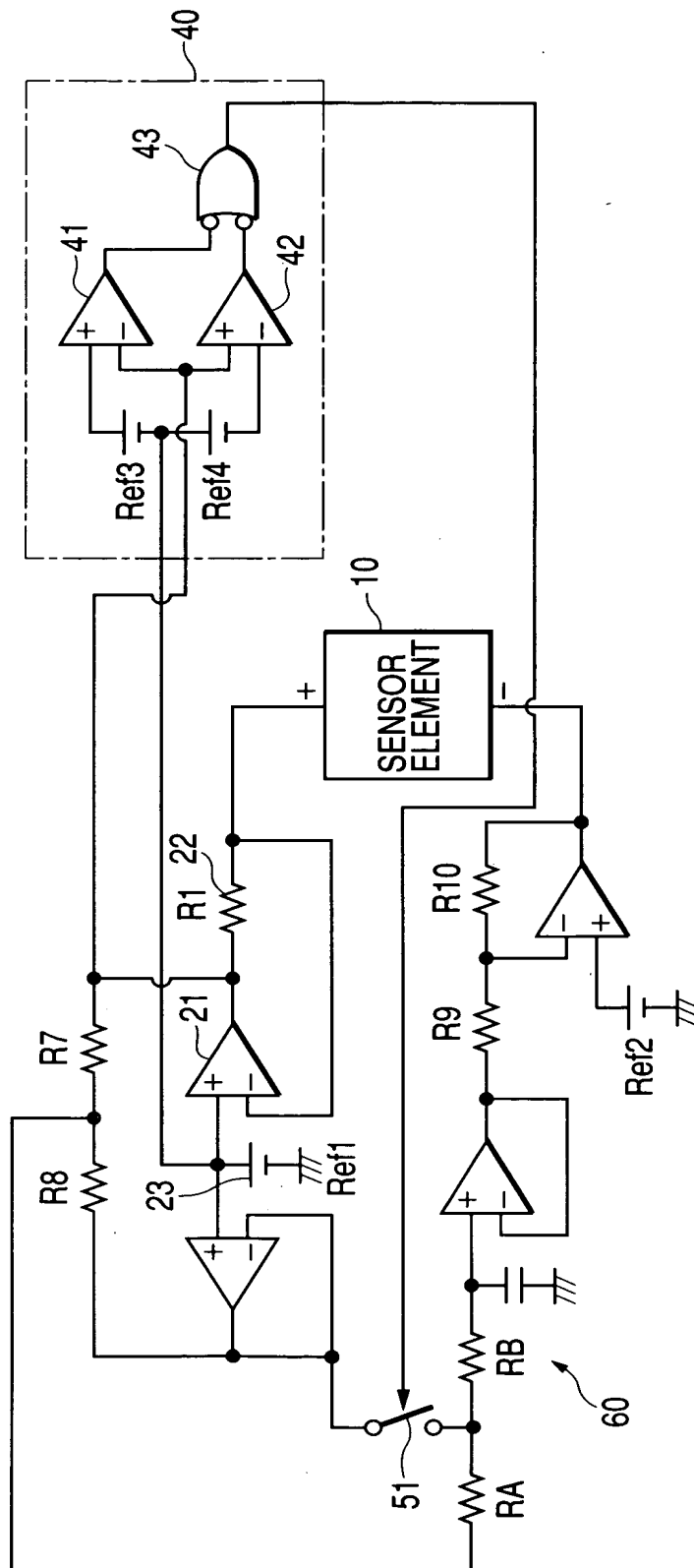


FIG. 16